

WHAT IS CLAIMED IS:

1. A field emission display, comprising:

a first substrate and a second substrate facing one another and having a predetermined gap therebetween;

5 an electron emission assembly formed on the first substrate for emitting electrons;

an illumination assembly formed on the second substrate for displaying images responsive to electrons emitted from the electron emission assembly; and

10 a grid plate mounted between the first and second substrates and configured to focus the electrons emitted from the electron emission assembly;

wherein the grid plate includes a mask section having a plurality of apertures for passing the electrons and having supports mounted to one side of the mask section and extending in a direction toward the first substrate to support the mask section from the first substrate.

2. The field emission display of claim 1, wherein the mask section and the supports are made of same material.

3. The field emission display of claim 1, wherein the mask section and the supports are made of different materials.

20 4. The field emission display of claim 1, wherein the supports are formed between a predetermined array of the apertures formed in the mask assembly, the supports being formed in at least one of along a direction substantially identical to a direction of the array of the apertures, and along a direction substantially perpendicular to the direction of the array of the

apertures.

5. The field emission display of claim 1, wherein the supports are formed between at most every other row of the apertures formed in the mask section and along one direction to thereby form a stripe pattern.

5 6. The field emission display of claim 3, wherein the mask section and the supports are formed of different materials having different etching rates.

7. The field emission display of claim 3, wherein the mask section is formed of metal material and the supports are formed of an insulation material.

8. The field emission display of claim 1, wherein the mask section is
10 formed to a thickness of 20 - 100 μm , and each of the apertures formed in the mask section has a minimal size of 20 - 100 μm .

9. The field emission display of claim 1, wherein a sectional aspect ratio of each of the apertures formed in the mask section is 5:1 - 1:1.

10. The field emission display of claim 1, wherein the electron emission
15 assembly comprises electron emission sources and electrodes for causing the emission of electrons from the electron emission sources;

wherein the electrodes include cathode electrodes and gate electrodes formed in a stripe pattern; and

wherein the cathode electrodes and the gate electrodes are
20 substantially perpendicular to one another and insulated from one another by an insulation layer.

11. The field emission display of claim 10,

wherein the electron emission sources are made of a carbon-based

material; and

wherein the carbon-based material is any one selected from a group consisting of carbon nanotubes, graphite, diamond, diamond-like carbon and C₆₀(Fullerene), or a mixture of at least two of the carbon nanotubes, graphite,
5 diamond, diamond-like carbon and C₆₀(Fullerene).

12. The field emission display of claim 10, wherein the cathode electrodes are formed on the insulation layer over the gate electrodes, and the electron emission sources are mounted on the cathode electrodes.

13. The field emission display of claim 1, wherein the supports taper
10 such that a contacting area of the supports toward the mask section are larger than a contacting area of the supports toward the first substrate.

14. The field emission display of claim 10, wherein:

the gate electrodes are formed on the insulation layer over the cathode electrodes;

15 an opening is formed in the gate electrodes and the cathode electrodes at each region where the cathode electrodes and the gate electrodes intersect; and

the electron emission sources are formed on surface areas of the cathode electrode exposed by the openings.

20 15. The field emission display of claim 10, wherein the supports are mounted on the insulation layer.

16. The field emission display of claim 1, further comprising:

an auxiliary insulation layer formed on an uppermost layer of the first substrate; and

the supports are mounted on the auxiliary insulation layer.

17. A grid plate for focusing electrons emitted from emitters in a field emission display having a first substrate and a second substrate facing one another with a predetermined gap therebetween, an electron emission assembly formed on the first substrate for emitting electrons, and an illumination assembly formed on the second substrate for displaying images responsive to the electrons, the grid plate comprising:

a mask section having a predetermined mask section thickness and having a plurality of apertures through the predetermined mask section thickness in a predetermined pattern such that a respective aperture is locatable over a respective pixel region of the field emission display defined by an intersection of a gate electrode and a cathode electrode; and

a plurality of supports having a predetermined support height, each support being mounted from a first substrate facing side of the mask section in a predetermined non-pixel region between apertures such that the mask section is supported by the supports at a predetermined distance from the first substrate;

wherein the predetermined non-pixel region is selected from the group consisting of:

a stripe pattern between the apertures in the direction cathode electrodes are formed, or

a strip pattern between the apertures in the direction gate electrodes are formed, or

a lattice pattern between the apertures in the direction cathode

electrodes are formed and in the direction gate electrodes are formed;

wherein a predetermined external voltage is applied to the grid plate to direct the electrons beams through respective apertures toward the second substrate.

5 18. The grid plate of Claim 17, wherein the plurality of supports support the mask section above the first substrate by an amount approximately corresponding to the predetermined support height.

19. The grid plate of Claim 17, wherein material forming the mask section and the supports are selected from the group consisting of:

10 the same conducting material for both the mask section and the supports, or

a conducting material for the mask section and an insulating material for the supports.

15 20. The grid plate of Claim 17, wherein the predetermined support height is greater than predetermined mask section thickness.

21. The grid pate of Claim 17, wherein the supports taper such that a contacting area of the supports toward the mask section is larger than a contacting area of the supports toward the first substrate.